The Effect of the Structure and the Quantity of Pearlite on Abrasive Wear (cont.) SOV/137-58-11-23444

Increasing the pearlite content above 50% is reflected in an increase of relative WR. It was established that the shape and dispersion of the cementite particles in pearlite significantly affect the WR of cast iron and steel under certain conditions of abrasive wear. Compared with nodular shape, the lamellar form of cementite is more desirable with regard to the WR characteristics of cast iron. The greatest WR is exhibited by sorbite-shaped pearlite. Bibliography: 10 references.

A. S.

Card 2/2

Toporov, G.V.

28(5) P.3

PHASE I BOOK EXPLOITATION SOV/2632

Akademiya nauk SSSR. Institut mashinovedeniya

Treniye i iznos v mashinakh; sbornik XII (Friction and Wear in Machines; Collection 12) Moscow, Izd-vo AN SSSR, 1958. 354 p. Errata slip inserted. 4,000 copies printed.

Ed.: M.M. Khrushchov, Professor; Ed. of Publishing House: M.A. Babichev; Tech. Ed.: Ye.V. Zelenkova; Editorial Board: Ye.M. Gut'yar, Professor, A.K. D'yachkov, Professor, I.V. Kragel'skiy, Professor, A.D. Kuritsyna, Candidate of Technical Sciences, L.Yu. Pruzhanskiy, Candidate of Technical Sciences, and M.M.Khrushchov, Professor.

PURPOSE: This book is intended for scientists, engineers, and technicians in the field of machine manufacture and operation, and for instructors in schools of higher education (vuzes).

COVERAGE: This collection of articles presents the results of new investigations in the field of wear, friction, and

Card 1/8

lubrication. The subjects discussed include structural changes in the surface layer of metals in friction, development of friction-brake materials, and theoretical investigations in the field of dry friction and friction with boundary and complete friction. For the abstract of each article see the Table of Contents. A bibliography of Soviet and non-Soviet materials on friction, wear and lubrication for 1954-55 prepared by Ye.O. Vil'dt is included.

TABLE OF CONTENTS:

These results are compared with theory allowing for the relationship of temperature and viscosity.

Results of an investigation of the performance of a sulfurized lubricant containing niger oil with a 2-3 percent sulfur content are presented.

AVAILABLE: Library of Congress

GO/mg
12-1-59

KIL'KOV, N.S., insh.; SLOSMAN, I.V., dots., kand.tekhn.nauk; TIKHONOV, I.T., dots., kand.tekhn.nauk; TOPOROV, G.V., dots.; FILATOVA, E.F., inzh.

Isothermal hardening of Kh12F die steel. Izv.vys.ucheb.zav.; chern.met. no.9:91-95 S '58. (MIRA 11:11)

1. Tomskiy politekhnicheskiy institut i Tomskiy elektromekhanicheskiy zavod.
(Chromium steel--Hardening)

TOPOROV, G.V.

Effect of cast-iron structure on the abrasive wear. Tren. i izn. mash. no. 12:42-63 '58. (MIRA 11:8)
(Cast iron--Metallography)
(Mechanical wear)

TOPOROV, G.V.; SMOKOTIN, G.Ya.

Effect of grain size on impact-fatigue strength of 45 steel. (MIRA 11:11)
Izv. TPI 106:153-164 '58.
(Tool steel--Metallography) (Mechanical wear)
(Mining machinery)

PHASE I BOOK EXPLOITATION SOV/4502

Akademiya nauk SSSR. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, tom 6 (Investigations of Heat-Resistant Alloys, Vol. 6) Moscow, 1960. 319 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova. Nauchnyy sovet po probleme zharoprochnykh splavov.

Editorial Board: I. P. Bardin (Deceased) Academician, G. V. Kurdyumov, N. V. Ageyev, Corresponding Member, Academy of Sciences USSR (Resp. Ed.), I. A. Oding, I. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences; Ed. of Publishing House: V. A. Klimov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This book is intended for research workers in the field of physics of metals and for metallurgists, particularly those working on heat-resistant alloys.

COVERAGE: This collection of 45 articles deals with various problems in the production of heat-resistant alloys. Special attention is paid to the mechanisms of deformation of such metals as aluminum, copper, iron, and nickel. Various defects and failures of metals are analyzed, and means for increasing the heat resistance and plasticity are described. Among the special problems discussed are: electrolytic conductivity of iron-aluminum alloys in the solid state; the mobility of atoms in nickel-iron alloys, depending upon defects of their crystalline structure; the kinetics of change in isolated pores; the irreversible thermal transformation of solid bodies, etc. No personalities are mentioned. References follow each article.

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Toporov, G.V.

KUZNETSOV, V.D.; SAVITSKIY, K.V.; SUKHARINA, N.N.; ZHDANOVA, V.N.; TOPOROV, G.V.; SAVITSKIY, A.P.

Effect of temperature variations and the speed of deformation on properties of steels with a varying dispersivity of carbide inclusions. Issl. po zharopr. splav. 6:56-63 '60. (MIRA 13:9)
(Steel--Hardening) (Metals, Effect of temperature on)

S/123/62/000/018/007/012
A006/A101

AUTHORS: Slosman, I. V., Tikhonov, I. T., Toporov, G. V., Kil'kov, N. S., Filatova, E. F.

TITLE: The effect of various types of heat treatment upon the properties of high-chromium stamping steels

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 18, 1962, 16, abstract 18B101 ("Sb. nauchn. tr. Tomskiy inzh.-stroit. in-t", 1961, 9, 26 - 45)

TEXT: The properties of grade X12Ф(Kh12F) and X12Ф1 (Kh12F1) steels were determined after heat treatment under conventional conditions. The steels were found to be low-resistant to impact loads and the toughness of the specimens decreased when quenching was performed from 1040°C and more. The impact resistance increases noticeably after isothermal quenching of Kh12F steel from 0 to 1020 - 1040°C with holding at 250 - 280°C for 2 - 6 hours. Literature data on the possibility of raising the resistance of high-chromium steels to impact loads by additional cold treatment were not confirmed by the experiments carried out

Card 1/2

The effect of various types of heat treatment upon...

in the described study. There are 14 figures.

T. Kislyakova

[Abstracter's note: Complete translation]

S/137/62/000/008/054/065
A006/A101

AUTHORS: Slosman, I. V., Tikhonov, I. T., Toporov, G. V., Kil'kov, N. S., Filatova, E. F.

TITLE: The effect of various types of heat treatment upon the properties of high-chromium stamping steel

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 8, 1962, 133 - 134, abstract 8I920 ("Sb. nauchn. tr. Tomskiy inzh.-stroit. in-t", 1961, v. 9, 26 - 45)

TEXT: Specimens of high-chromium steels, grade X12 Ф (Kh12F) (1.4% C, 11.5% Cr, 0.3% V) and grade X12Ф1 (Kh12F1) (1.4% C, 12% Cr, 0.62% V) were subjected to isothermal quenching from 1,000 - 1,040°C and held at temperatures > M_S; to long-lasting isothermal quenching at temperature ranges below martensite transformation, and to conventional quenching with subsequent cold treatment and tempering at elevated temperatures. To raise the impact resistance of Kh12F-steel die parts, isothermal quenching by one of the following methods is recommended: a) heating to 1,040°C, isothermal quenching during 2 - 6 hours at 250°C; b) heat-

Card 1/2

The effect of various types of...

S/137/62/000/008/054/065
A006/A101

ing to 1,020°C and isothermal quenching for 2 - 6 hours at 270 - 280°C. After applying the aforementioned conditions of isothermal quenching, a considerable amount of intermediate-range structures are formed in the steel whose strength is somewhat below the martensite strength; the strength of the steel, however, remains sufficiently high for the operational die parts. Long-lasting isothermal quenching of high-chromium steels, in the range of martensite transformation at 18 - 120°C and up to 100 hours holding time did not increase the impact strength of these steels. Literature data indicating the possibility of raising a_k of steel by additional cold treatment were not confirmed by the tests. There are 8 references.

[Abstracter's note: Complete translation]

A. Babayeva

Card 2/2

TOPOROV, G.V.; MOROZOVA, V.V.

Resistance to impact-fatigue fracture in steel of a heterogeneous structure. Zav.lab. 31 no.3:357-360 '65.
(MIRA 18:12)

1. Tomskiy inzhenerno-stroitel'nyy institut.

BYSTROV, Yu.G.; TOPOROV, G.V.

Impact fatigue in steel at varying stress amplitudes. Zav. lab. 31 no. 12:1504-1505 '65 (MIRA 19:1)

1. Tomskiy inzhenerno-stroitel'nyy institut.

KONSON, A.S.; TARASOV, P.I.; TOPOROV, M.F.

Principal technological and economic indices of television studio transmitting equipment. Elektrosviaz' 18 no.10:66-70 O '64.
(MIRA 17:12)

TOPOROV, N.A.; CHERNYAK, Yu.I.

Conference on the mechanization of viticulture. Trakt. i sel'khozmash. 31 no.1:46 Ja '61. (MIRA 14:1)
(Viticulture) (Agricultural machinery)

TOPOROV, N. A.

10900* The Kinetics of the Formation of Dicalcium Silicates. (Russian.) N. A. Toropov, A. M. Ginstling and G. Lugovina. *Doklady Akademii Nauk SSSR*, new ser., v. 84, May 11, 1952, p. 293-295.

The above was studied for the reaction between $CaCO_3$ and SiO_2 at 1350°C. 10 ref.

24(8) PHASE I BOOK EXPLOITATION SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotempera-turnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh; trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Transactions of the Conference on Experimental Techniques and Methods of Investigation at High Temperatures) Moscow, AN SSSR, 1959. 789 p. (Series: Akademiya nauk SSSR. Institut metallurgii. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and production of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

Toporov, N.A., and I.A. Bondar'. Effect of Calcium Fluoride on the Crystallization Process in the Ternary System $CaO-Al_2O_3-SiO_2$ 205

It was shown that the addition of 5 percent of CaF_2 decreases the viscosity of the melt and lowers the temperature of crystallization by 50-70 percent. CaF_2 can be used as an activator of the binding properties of blast-furnace slags. The addition of 5 percent of CaF_2 lowers the refractive index of glasses by 5-6 figures in the third decimal place. A section with a constant CaF_2 content of 5 percent was drawn in the investigated portion of the $CaO-Al_2O_3-SiO_2-CaF_2$ quaternary system, adjacent to the $CaO-SiO_2$ side and extending from 20 to 65 percent SiO_2 and 80 percent Al_2O_3.

Mikheyev, V.I. Contact Method of Measuring the Melting Point of Metals and Certain Metallic Alloys 213

The method is based on direct measurement of the thermoelectromotive force in the contacting of a hot thermocouple junction with a drop of liquid metal upon fusion of the specimen under the action of the electric current. The contact method is recommended for the determination of the initial fusion temperature of alloy and complex alloy systems in the temperature range of the crystallization of solid solutions.

Card 10/32

3

TOPOROV, N.A., dekter tekhnicheskikh nauk, professor; BARZAKOVSKIY, V.P., dekter khimicheskikh nauk.

Silicates. Nauka i zhizn' 23 no.3:13-16a Mr '56. (MLRA 9:7)
(Silicates)

TOPOROV, N. A.

USSR/Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical Analysis. Phase Transitions, B-8

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 368

Author: Toporov, N. A., and Galakhov, F. Ya.

Institution: Academy of Sciences USSR

Title: Liquation in the System ZrO_2-SiO_2

Original Periodical: Izv. AN SSSR, section on chemical sciences, 1956, No 2, 158-161

Abstract: The ZrO_2-SiO_2 system has been investigated over the temperature range 1,800 to 2,500°. The experiments were carried out with an argon atmosphere in the microfurnace described earlier (F. Ya. Galakhov, Zavod. laboratoriya, 1951, No 2, 254). On the curve connecting the melting points no maximum could be found for the compound $ZrSiO_4$. It was established that $ZrSiO_4$ melts by decomposing into ZrO_2 and liquid. At high temperatures liquation can be observed in the system. The liquation region covers the concentration range 41-62 weight percent SiO_2, starting at 2,250°, and shows a critical point

Card 1/2

USSR/Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical Analysis. Phase Transitions, B-8

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 368

Abstract: at 53% SiO_2 and 2,430°. A phase diagram has been drawn for the high-temperature region of the investigated system.

Card 2/2

TOROPOV, N.A.

15(2)

SOV/30-59-3-33/61

AUTHOR: Toporov, N. A., Doctor of Technical Sciences

TITLE: News in Brief (Kratkiye soobshcheniya) The 6. International Congress on Ceramics (6. Mezhdunarodnyy keramicheskiy kongress)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 3, p 108 (USSR)

ABSTRACT: The congress was organized by the European Union of Experts on Ceramics and took place from September 15 to September 22, 1958 at Wiesbaden (German Federal Republic). The Soviet delegation consisted of N. A. Toporov and P. F. Rumyantsev. The author of the present article makes special mention of the lectures delivered by the Austrian scientists G. Buviye, E. Kaltner, T. Khvatal, F. Schmitler, as well as by a number of English and West-German scientists. N. A. Toporov and I. A. Bondar' (USSR) gave data concerning the influence exercised by fluorine-containing calcium additions upon the crystallization conditions in the system $CaO-Al_2O_3-SiO_2$.

Card 1/1 The lecture gave rise to a discussion.

TOPOROV, N.

Aerodynamic scales. IUn.tekh. 4 no.2:48 F '60.
(MIRA 13:6)

(Aerodynamic measurement)

S/080/62/035/010/003/012
D204/D307

AUTHORS: Toporov, N.A. and Fedorov, N.F.

TITLE: Stabilization of the high temperature forms of dicalcium silicate (C_2S) with lanthanide orthosilicates

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 10, 1962, 2156-2161

TEXT: The transformations of C_2S between the various modifications are briefly reviewed, showing that the rare earth orthosilicates are similar in a number of properties to α-C_2S, and should thus stabilize this form. The system Ca_2SiO_4 - $Y_4(SiO_4)_3$ were studied, over the whole range of compositions in 5% steps, to establish the crystalline phases present. The starting mixtures were prepared from synthetic γ-C_2S, Y_2O_3 and SiO_2, the latter being in the molar ratio of 2:3. The liquidus temperatures of the compositions were measured and the specimens were examined microscopically

Card 1/2

and by X-rays. The optical constants and densities were determined. Compositions containing up to 40% $Y_4(SiO_4)_3$ were homogeneous and transparent, but rapidly became two-phase when the latter amount of $Y_4(SiO_4)_3$ was exceeded. It was found that a series of solid solutions based on C_2S exists in a limited range of compositions, the limiting concentration being 42.5 ± 2.5% $Y_4(SiO_4)_3$. Three different regions were observed, containing (1) up to 5%, (2) 10 to 20%, and (3) 25 to <40% of $Y_4(SiO_4)_3$ (by weight), the first region corresponding to the stabilization of β-C_2S, the second to the stabilization of α'-C_2S, and the third to that of α-C_2S. There are 2 figures and 2 tables.

SUBMITTED: July 18, 1961

TOPOROV, N. A.; DEGEN, M. G.

"Spherolites in silicate glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

YESAFOV, V.I., and Students: GULYAKOV,V.M. KARGOPOL'TSEVA,V.V., KULAKOVA, A. P. RAZMYSLOV, G.V., TOPOROV, N.D.

"The Synthesis of New Hydrocarbons with Conjugate System Double Bonds. III" Zhur.obshch. khim. 10, No. 22, 1940. Laboratory of Organic Chemistry, Sverdlovsk State University. Received 7 June 1940.

Report, U-1612, 3 Jan. 1952.

TOPOROV, O.;KURDYUMOV, I.I.

Arch-frame livestock barns. Zhivotnovodstvo 21 no.11:66-68 N '59
(MIRA 13:3)

1. Glavnyy inzhener Altayskogo krayevogo proyektnogo instituta (for Toporov). Nachal'nik otdela sel'skokhozyaystvennogo proyektirovaniya Altayskogo krayevogo proyektnogo instituta.
(Barns)

PASS, L.G.; RODIN, A.F.; SLUTSKIY, M.B.; TOPOROV, P.T.; FEL'DMAN, L.S.; VAL'DMAN, D.A.; TUKACHINSKIY, M.S.; YAKOVLEVA, T.V.; ISAKOV, V.I., red.; MORSKOY, K.L., red.izd-va; BOROVNEV, N.K., tekhn.red.

[Organizing machine accounting in the construction industry; collection of articles] Organizatsiia mekhanizirovannogo ucheta v stroitel'stve; sbornik statei. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 171 p. (MIRA 13:3)
(Machine accounting)

84606

S/135/60/000/004/003/008
A115/A029

26.2120 (2513 only)

AUTHORS: Toporov, V.A., Candidate of Technical Sciences, Kalgushkina, V.I., ~~Engineer~~

TITLE: Changed Properties of Welded Joints in Rotors and Cylinders of Gas Turbines After 25,000 Working Hours 26

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 4, pp. 10 - 14

TEXT: In the experimental ЭГТУ-700 (EGTU-700) gas turbine made in 1950, the first welded rotor in the USSR has been used. ЦТ -1 (TsT-1) and ЦЛ-11 (TsL-11) electrodes were used. The rotor was made of heat resistant ЭИ-405 (EI-405) austenite steel. Before the welding process, the forgings of the rotor have been austenized (1,170°C, 1½ hours water cooled). After welding, the rotor was stabilized (760° - 780°C, 24 hours air cooled). The rotor has been tested up to a temperature of 750°C, thereafter the beating of the rotor was 0.006 - 0.008 mm. Simultaneously, spare forgings of disks and framing were made of the same material and under the same conditions. An additional model has been designed to be used for obtaining initial data of mechanical properties. The turbine-cylinder with welded-on parts, i.e., flanges, etc. (Fig. 2), was made of 1Х18Н9Т (1Kh18N9T)

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S/135/60/000/004/003/008
A115/A029

Changed Properties of Welded Joints in Rotors and Cylinders of Gas Turbines After 25,000 Working Hours

steel. The turbine-cylinder was welded with 4 mm TsL11 electrodes. The chemical composition of the rotor and cylinder metals is given in Table 1. The turbine worked about 25,000 hours at a gas temperature of 700°C and a speed of 4,200 rpm, during which time 75 fractures of blades occurred. To prevent damage of the cylinder by broken blades, a reverberator has been provided (Fig. 2). After dismantling the turbine, all welding seams were found in good condition. One of the seams of the rotor has been subjected to turning by layers. About 23 - 24 mm of the outer surface, four 1 mm wide and about 80 mm long slag inclusions on the rotor disk seam have been discovered, which did not affect the normal working of the rotor. At the end, the beating of the rotor was 0.09 mm. External inspection of the cylinder revealed cracks (Fig. 3) on the flange joints. These cracks were discovered after 6,000 working hours of the turbine. The formation of cracks may be explained by stress concentration on points where relatively thick elements of the body with narrow weldments were joined. It is assumed that great differences of temparature in many working parts may cause cracks. Results of mechanical tests of the seam, welded joints and basic metal are given in Table 2. The plastic properties of basic metal of the rotor, especially the loss of impact

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S/135/60/000/004/003/008
A115/A029

Changed Properties of Welded Joints in Rotors and Cylinders of Gas Turbines After 25,000 Working Hours

toughness at cut-out tangential patterns dropped from 7.3 to 2.6 kg cm^2. Figures 4 and 5 give the changes of the mechanical properties of basic metal and weldments of the cylinder after various working periods at a temperature of 600°C. Mechanical properties of the seam welded with TsL-11 electrodes changed more than the properties of the basic metal. The absolute value of the impact toughness of the seam dropped from 4 to 1 kg cm^2. Table 3 gives longitudinal firmness of patterns of seams at 600°C after 25,000 working hours. Figure 7 shows microstructures of metal fused with TsT-1 electrodes at the beginning of the test, after stabilization (750°C - 20 hours); and after 25,000 working hours. There are 7 figures and 3 tables.

This work has been registered with the Komitet po delam izobreteniy i otkrytiy pri Sovete Ministrov SSSR (Committee for Inventions and Discoveries of the Council of Ministers of the USSR) under the No. 14317 with priority as from June 31, 1959.

ASSOCIATION: Tsentral'nyy Nauchno-issledovatel'skiy Institut tyazhelogo mashinostroyeniya (Central Scientific Research Institute of Heavy Machine Building)

Card 3/3

TOPOROV, V. N. (Moscow)

"Concerning Several Analogs to the Problems and Methods of Contemporary Theoretical Linguistics in the Works of Ancient Indian Grammaticians."

Theses- Conference on Machine Translations, 15-21 May 1958, Moscow.

TOPOROV, V.N.

Some problems in studying the Baltic toponymy of Russian territories. Vop. geog. no.58:41-49 '62. (MIRA 15:9)
(Russia, Northern—Names, Geographical—Baltic)

IVANOV, V. V.; TOPOROV, V. N.

"Lingvisticheskiye voprosy etnogeneza ketov v svyazi s problemoy vkhozhdeniya ikh v tsirkumpolyarnuyu oblast'."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

TOPOROV, Yu.A.; GRINSHTEYN, S.M.

Glycoproteins of the blood serum in patients with chronic traumatic osteomyelitis. Vop.med.khim. 11 no.5:74-77 S-O '65. (MIRA 19:1)

1. Kafedra travmatologii i ortopedii Tashkentskogo gosudarstvennogo meditsinskogo instituta i laboratoriya biokhimii TSentral'nogo instituta travmatologii i ortopedii, Moskva. Submitted August 17, 1964.

TOPOROV, YU. A.

USSR/Miscellaneous - Training

Card 1/1 : Pub. 133 - 19/21

Authors : Toporov, Yu. A., engr. of the Nikolaevsk Oblast' administration of communications

Title : Deficiencies in the organization of technical education

Periodical : Vest. svyazi 9, page 32, Sep 1954

Abstract : A letter to the editor describing deficiencies in the organization of telegraph-telephone service personnel in the Nikolaevsk Oblast'.

Institution : ...

Submitted : ...

TOPOROV, Yu.A., inzhener.

Review of V.V.Novikov's book "The telegraph station supervisor." Vest. sviazi 16 no.8:33 Ag '56. (MLRA 9:10)

1.Nachal'nik otdela elektrosvyazi Nikolayevskogo oblastnogo upravleniya svyazi.

(Telegraph)

ISHIN, D.A.; TOPOROV, Yu.A.

Permanent conference attached to the office of the regional telecommunication administration. Vest. sviazi 23 no.10:20-22 O '63. (MIRA 16:12)

1. Nachal'nik Nikolayevskogo oblastnogo upravleniya svyazi (for Ishin).
2. Starshiy inzh. Nikolayevskogo oblastnogo upravleniya svyazi (for Toporov).

AUTHORS: Kosikov, S.I., Toporov, Yu.P. 119-58-4-12/15

TITLE: Universal Tribometer for Static Friction (Universal'nyy tribometr statícheskogo treniya)

PERIODICAL: Priborostroyeniye, 1958, Nr 4, pp. 29-30 (USSR)

ABSTRACT: With this device it is possible to determine the friction coefficient on ground and polished surfaces of any size. A rigidly mounted dynamometer is driven by a motor by means of small gears. The recording device is connected with the dynamometer by means of a thread. This device consists of a metal disk (10-20 mm) into which three balls (Ø of 1-5 mm) are pressed and fixed. The balls glide along the surface to be investigated. The metal disk is weighted according to requirements. The frictional forces are proportional to the travel of the dynamometer spring. The deformation of the spring is measured electrically. The latest type of this device is shown by an illustration. There are 5 figures.

Card 1/1

AUTHOR: Toporov, Yu.P., Engineer SOV/117-58-12-21/36

TITLE: On Methods of Testing Surfaces (O metodakh kontrolya poverkhnostey)

PERIODICAL: Mashinostroitel', 1958, Nr 12, pp 28-29 (USSR)

ABSTRACT: The article gives general information on methods of testing degreased surfaces and recommends the tribometric method, which consists in measuring the coefficient of static friction between a standard slider and the investigated surface (first suggested in 1950 by B.V. Deryagin). The information includes a description of a portable device designed by the author and S.I. Kosikov enabling one to determine the coefficient of static friction on parts of any size. The simple design, the measuring speed and the results obtained by the described tribometer will entail its extensive use for testing the surfaces of polished and ground parts made of various materials. There are 1 diagram and 9 references, 4 of which are Soviet, 4 English and 1 Japanese.

Card 1/1

05457
SOV/120-59-3-28/46

AUTHORS: Toporov, Yu. P., Lazarev, V. P.

TITLE: An Instrument for Measuring External Static Friction in Controlled Atmospheres (Pribor dlya issledovaniya vneshnego staticheskogo treniya v kontroliruyemoy atmosfere i v vakuume)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 3, pp 123-124 (USSR)

ABSTRACT: Fig 1 shows the apparatus; air enters at the bottom left and water at the bottom right; the tube on the top right. The use of the instrument is not described in detail, because the design is modified from that described in Ref (4). The instrument measures the force between the plate 5, which moves horizontally at a fixed speed, and the disc 6 (of known weight). The disc rests on three steel balls 1 - 3 mm in diameter. The disc is coupled to the spring rod 3, which is used with microscope 4 to measure the force. The nut 15 is held by the guides 13 and is driven by the screw 16. There is 1 figure and 5 references

Card 1/2

05457
SOV/120-59-3-28/46

An Instrument for Measuring External Static Friction in Controlled Atmospheres

2 of which are Soviet and 3 English.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, Academy of Sciences of the USSR)

SUBMITTED: April 9, 1958

Card 2/2

TOPOROV, Yu.P.

Effect of moisture on the external friction of solids. Inzh.-fiz.zhur. no.4:44-48 Ap '60. (MIRA 13:8)

1. Institut fizicheskoy khimii AN SSSR, Moskva.
(Friction)

TOPOROV, Yu.P.; DERYAGIN, B.V.

Frictional properties of solids at elevated hydrostatic pressures. Prib. i tekh. eksp. no.6:132-133 N-D '60. (MIRA 13:12)

1. Institut fizicheskoy khimii AN SSSR.
(Friction) (High pressure research)

S/032/60/026/008/008/011
B015/B064

AUTHORS: Deryagin, B. V., Lazarev, V. P. (Deceased), Toporov, Yu.P.

TITLE: An Instrument for Studying the Static Friction of Polymers

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 6, pp. 1020-1021

TEXT: An instrument is described (Figs. 1, 2) that allows to measure the static friction coefficient of polymers under specific pressure loads of up to 300-600 kg/cm^2. In principle, the instrument consists of a conical envelope into which a cone is introduced. The sample is placed between envelope and cone in the form of a ring. Static friction is brought about by a slow rotation of the cone by means of an electric motor; the cone is loaded by means of a lever. The torque of the cone is determined with an oscilloscope and a strain gauge. The specific pressure of the cone on the ring-shaped sample is calculated from an equation, and the resulting value is introduced into the formula to compute the friction coefficient. There are 2 figures.

Card 1/2

An Instrument for Studying the Static Friction of Polymers

S/032/60/026/008/006/011
B015/B064

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

Card 2/2

S/020/62/146/006/013/016
B107/B186

AUTHORS: Deryagin, B. V., Corresponding Member AS USSR, Toporov, Yu. P.

TITLE: Applicability of a two-term law of friction to the frictional properties of polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 6, 1962, 1356-1359

TEXT: The dependence of the specific force of friction on the specific pressure was examined for the following pairs of materials: ШХ-15 (ShKh-15) - Teflon (Figs. 1 and 2), steel - polyethylene (Fig. 1), steel - polyamide (Fig. 1), steel - tread rubber (Fig. 3), and steel - uncompounded rubber (Fig. 4). The device and the method adopted for this purpose, as previously described in detail (B. V. Deryagin, Yu. P. Toporov, Koll. zhurn., v.23, 118 (1961)), made it possible to apply specific pressures of up to 1000 kg/cm^2. The purpose of this work was to find out whether Deryagin's formula (Zs. f. Phys., v. 88, 661 (1934)) is valid also for the pairs of materials mentioned above: $F = \mu N + \mu pS$, where F is the external force of friction; N is the perpendicular load; μ is the true coefficient of fric-

Card 1/2

tion; S is the true contact area; and p is the specific molecular adhesion. The results (Figs. 1 - 4) lead to the conclusion that the perpendicular load acts on the force of friction not only indirectly through the true contact area, as assumed by Terzaghi (K. Terzaghi, Erdbaumechanik, Wien, 1925) and Bowden (F. P. Bowden, D. Tabor, Friction and Lubrication of Solids, Oxford, 1954), but also directly according to Deryagin's two-term formula. The curvature of the graph for polyethylene (Fig. 1) is ascribed to the fact that a first effect of the increasing perpendicular load is to enlarge the true contact area. There are 4 figures and 17 references: 10 Soviet, 3 non-Soviet.

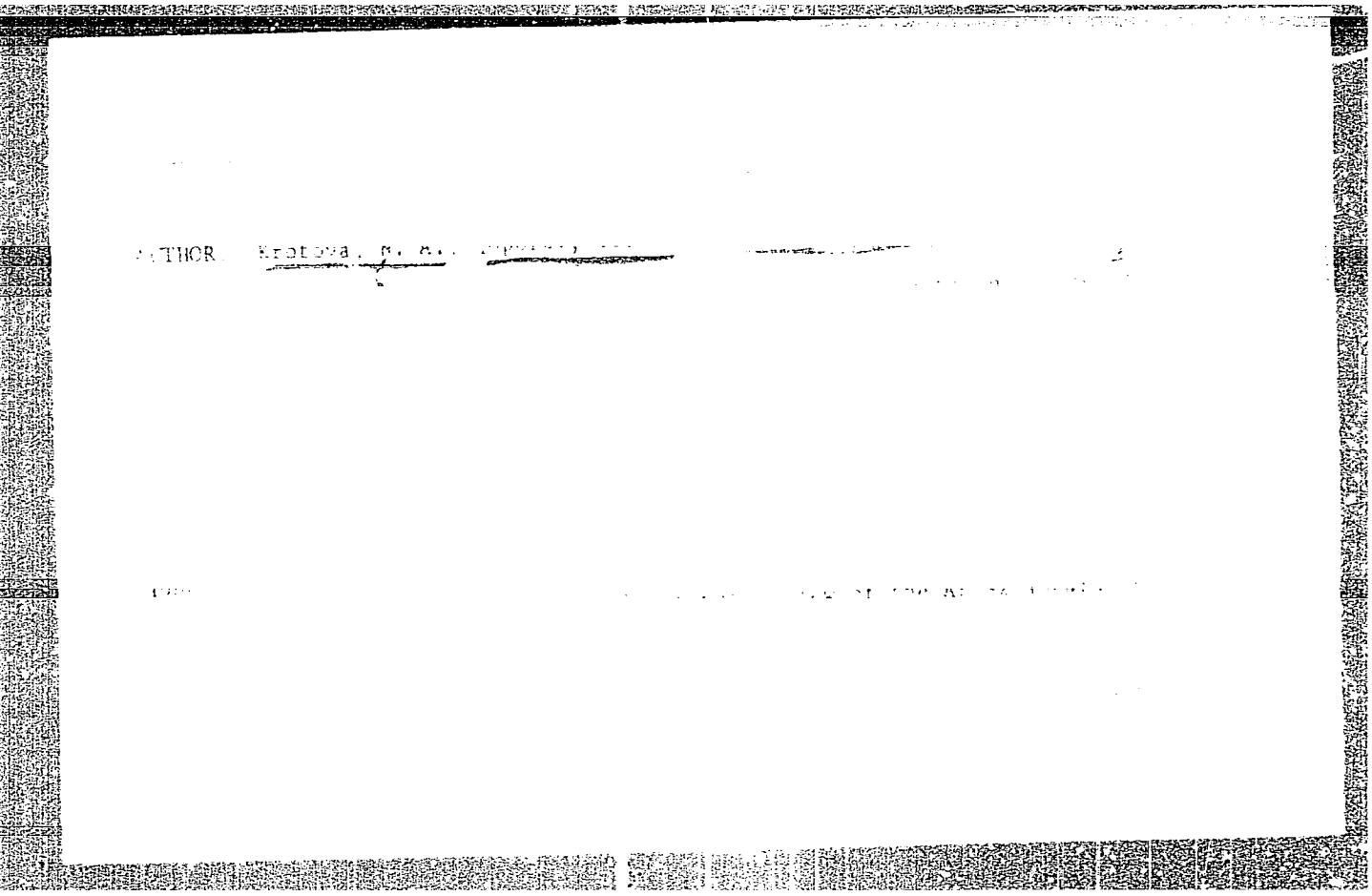
ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

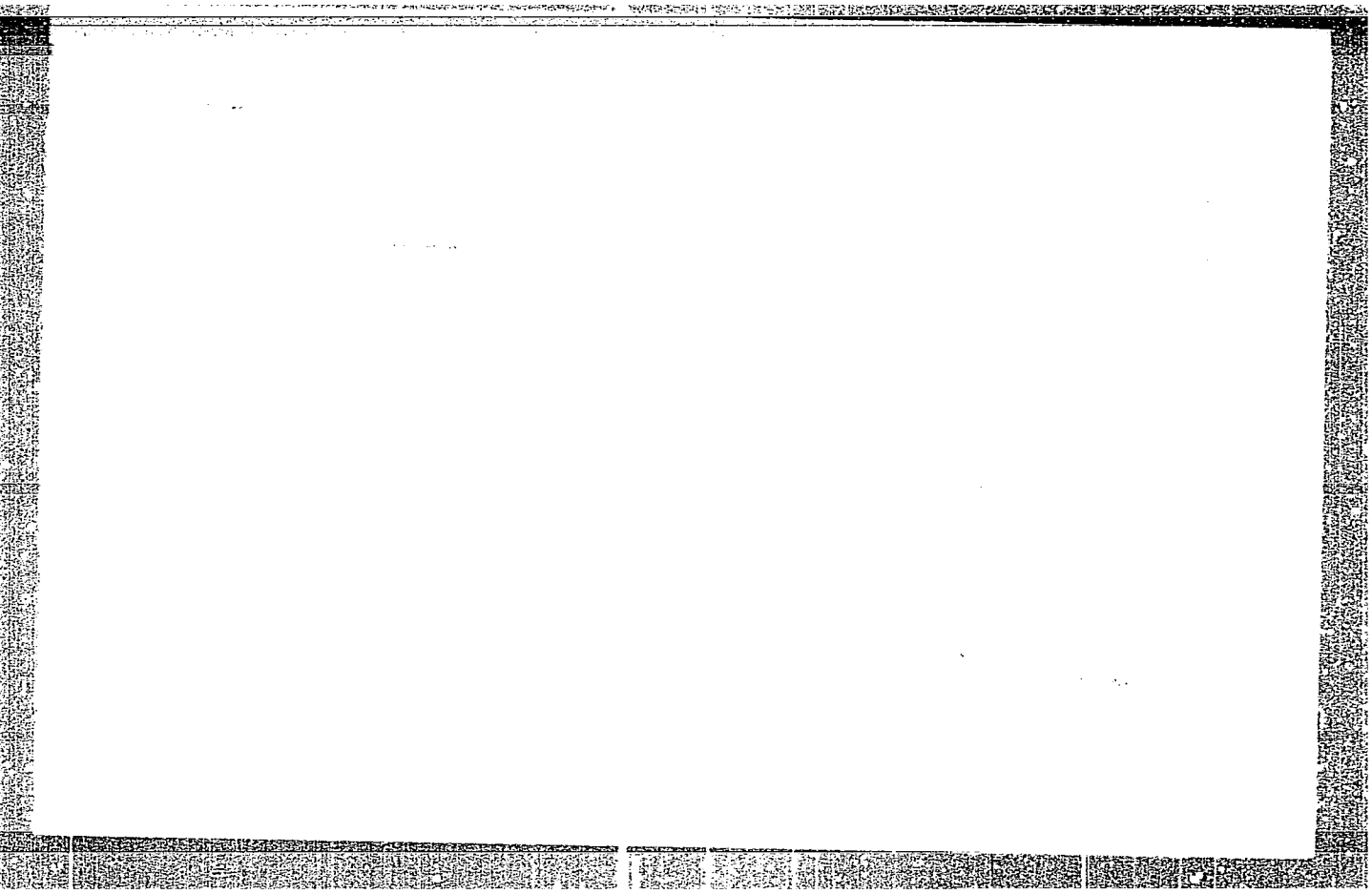
SUBMITTED: June 30, 1962

SMIRNOVA,A.M.; KOVARSKAYA, L.B.; RAYKOVA, T.V.; TOPOROV, Yu.P.

Effect of the shape of iron powder particles as fillers on the structural and mechanical properties of filled polyethylene. Koll.zhur. 25 no.6:683-688 N-D '63. (MIRA 17:1)

1. Institut fizicheskoy khimii AN SSSR, Moskva.





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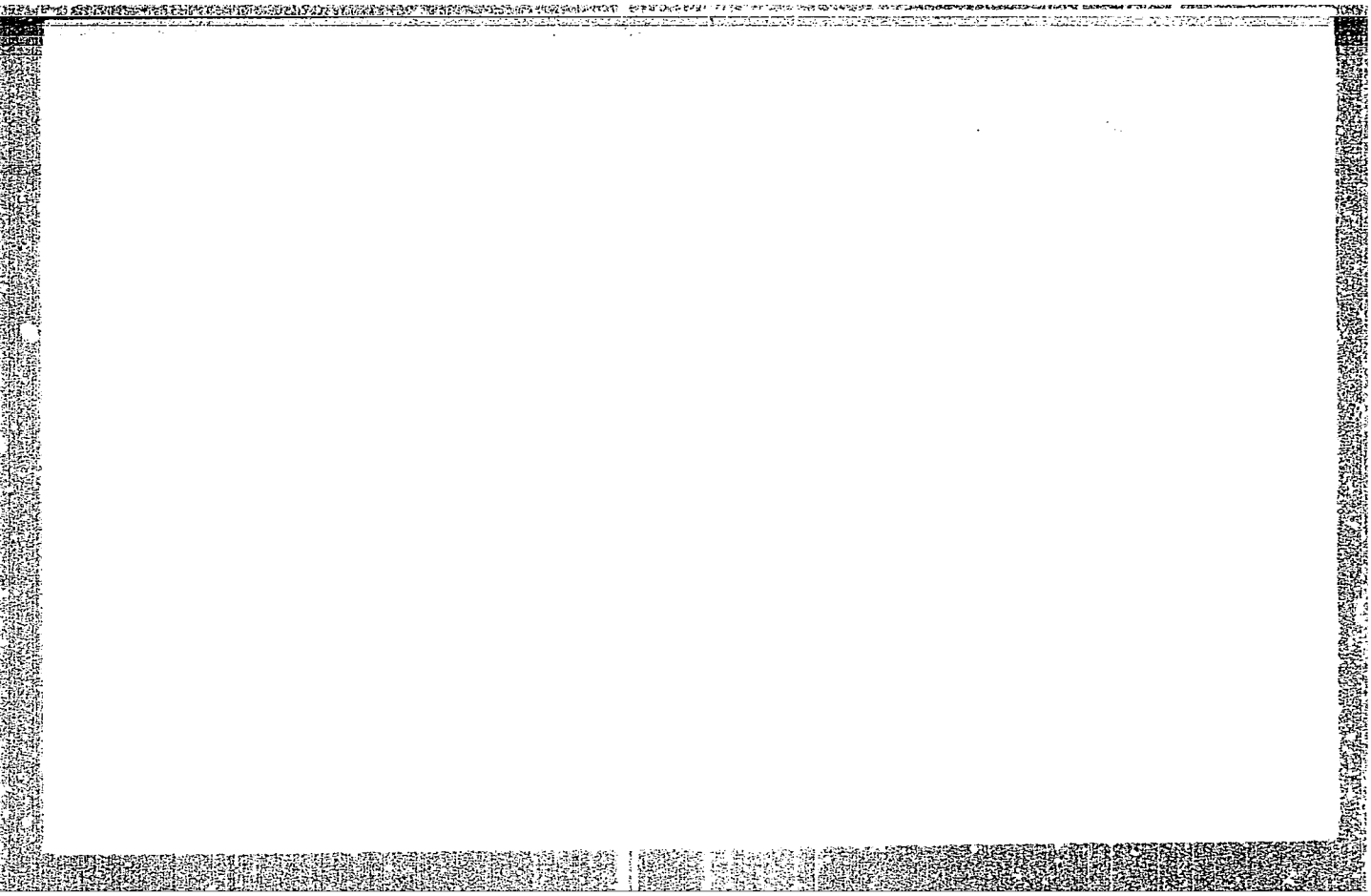

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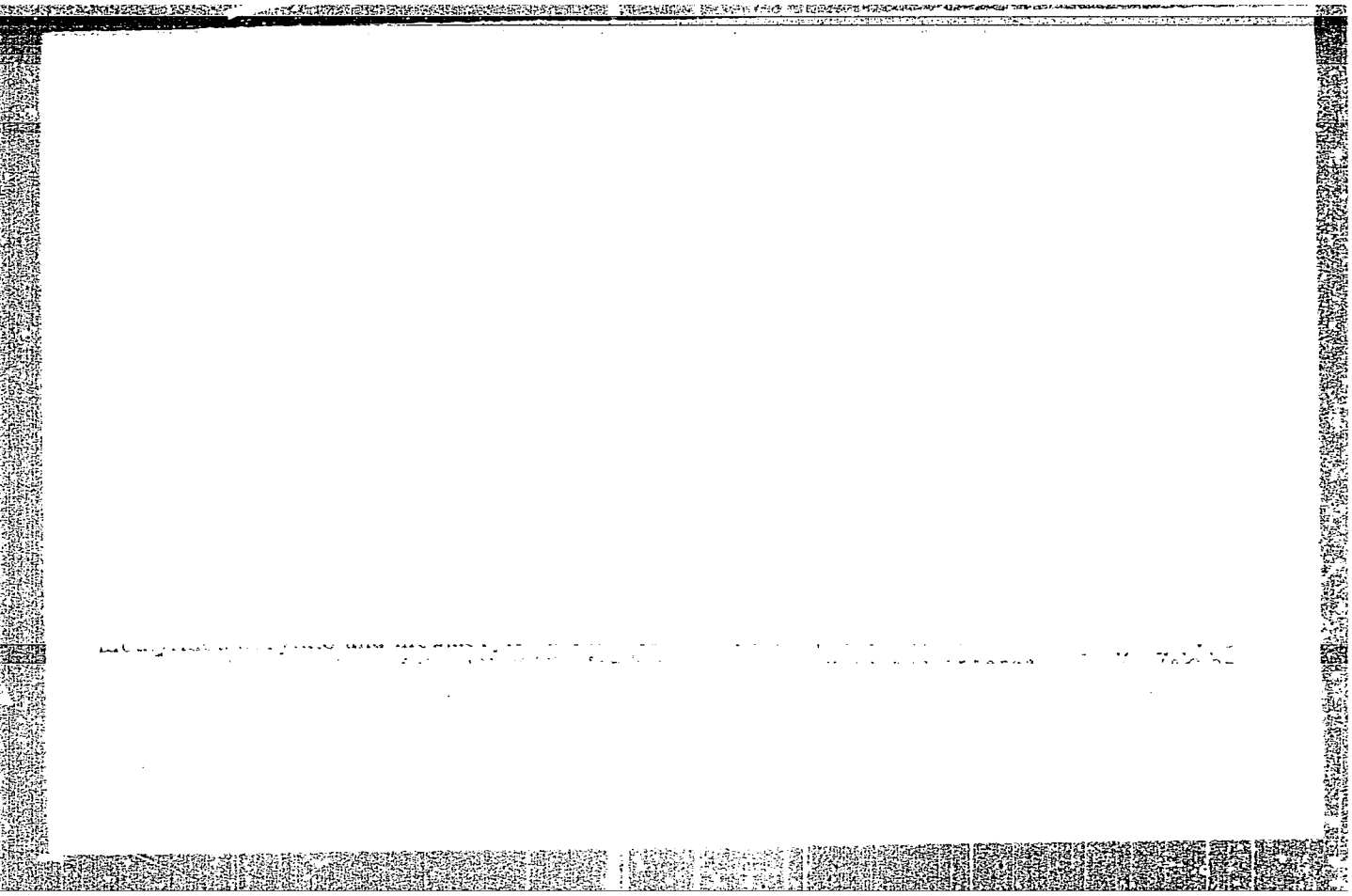

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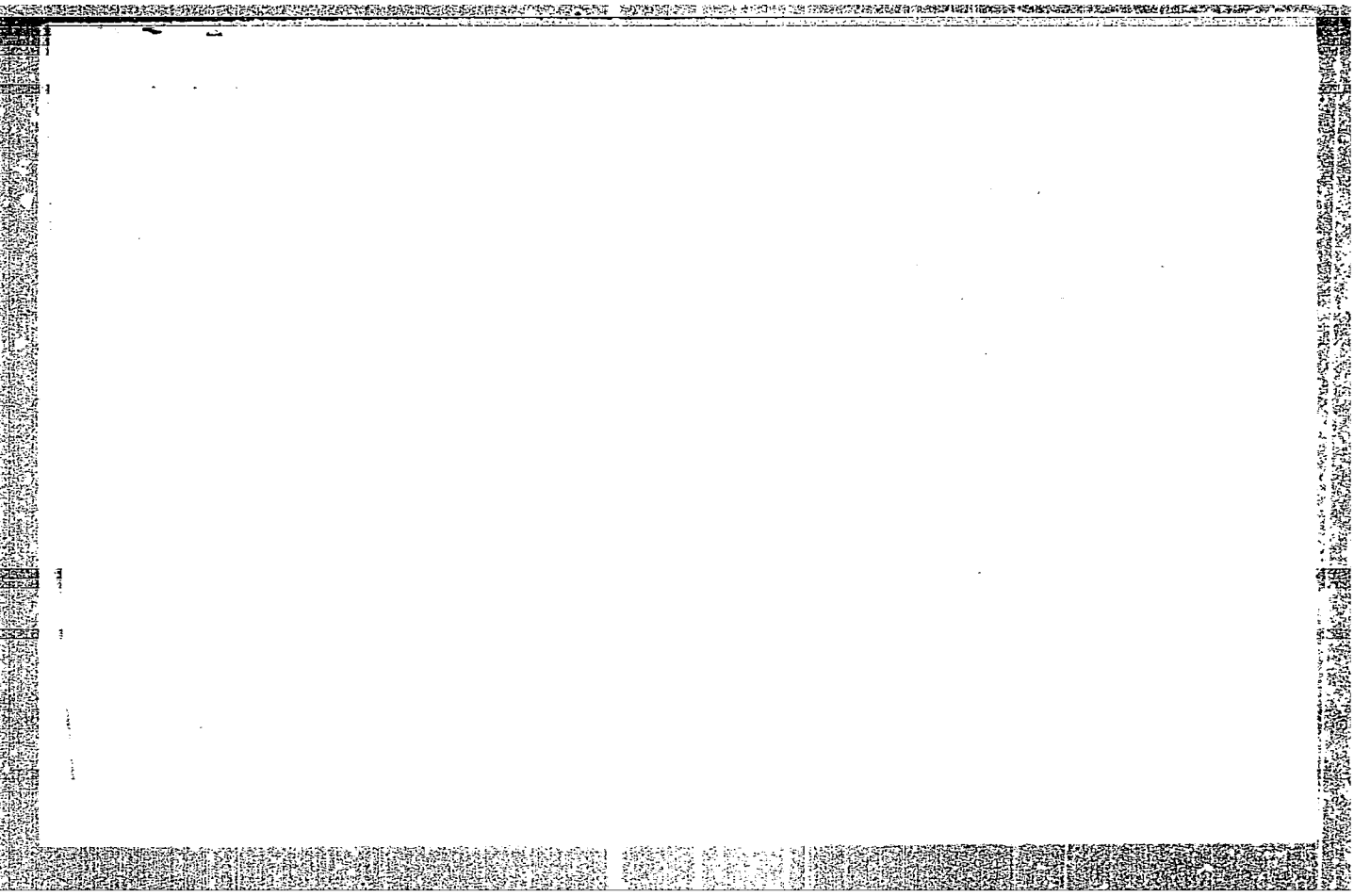

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001756320001-6"

DERYAGIN, B.V.; TOPOROV, Yu.P.; ALEYNIKOVA, I.N.

Evaluation of the strength of adhesion of spherical dielectric particles to metal surfaces. Koll. zhur. 26 no.3:394-395 My-Je '64 (MIRA 17:9)

1. Institut fizicheskoy khimii AN SSSR, Moskva.

L 24865-66 EWT(m)/EWP(j)/T/EIC(m)-6 IJP(c) WW/DJ/GS/RM

ACC NR: AT6008941 (A) SOURCE CODE: UR/0000/65/000/000/0026/0033

AUTHORS: Deryagin, B. V.; Toporov, Yu. P.; Smirnova, A. M. 64 61 B+1

ORG: none

TITLE: Some regularities of the external friction of polymers

SOURCE: Moscow. Institut mashinovedeniya. Plastmassy v podshipnikakh skol'zheniya; issledovaniya, opyt primeneniya (Plastics in friction bearings; research and experiment in application). Moscow, Izd-vo Nauka, 1965, 26-33

TOPIC TAGS: polymer, friction, polyethylene plastic, iron powder, steel, melting point, molecular weight / ShKh15 steel

ABSTRACT: The frictional properties of polymers were tested. The work is a continuation of previous work by B. V. Deryagin and Yu. P. Toporov (Dokl. AN SSSR, 1962, 146, 1356). The tests consisted of measuring the static friction force between the upper and lower surfaces of a flat gauge moving in a horizontal plane and between the surfaces of two polymer specimens. The gauges were of ShKh15 steel and had surfaces of 10th--12th class smoothness. Polyethylene with a molecular weight of 20 000 and a melting point of 110C was tested. Dendritic iron was used as a filler. Thermomechanical compression curves of polyethylene were plotted by Kargin's method for a pressure of 40 kg/cm^2 (see Fig. 1). Specimens with 0, 80,

Card 1/2

L 24865-66

ACC NR: AT6008941

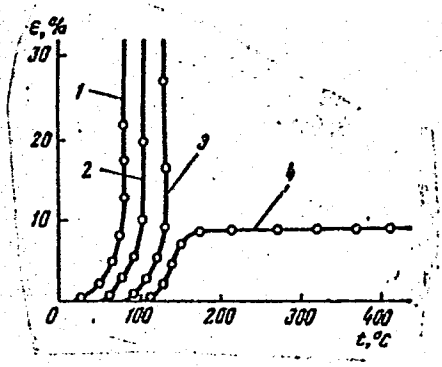

Fig. 1. Relative deformation of polyethylene versus temperature for: 1 - 0% Fe; 2 - 50% Fe; 3 - 80% Fe; 4 - 90% Fe.

and 90% filler were used to study frictional properties. It is found that filling the polyethylene with highly dispersed iron has practically no effect on its frictional properties under conditions of static friction over a wide range of normal loads. The filler increases both the mechanical strength of the specimens and their ability to withstand a normal load. Orig. art. has: 2 formulas and 8 graphs.

SUB CODE:07, 11/SUBM DATE: 31Jul65/ ORIG REF: 009/ OTH REF: 001

Card 2/2

L 3791-66 EWP(h) EWT(d)/EWT(m)/EWP(w)/EPF(c)/EWP(v)/EWP(j)/T/EWP(t)/EWP(k)/EWP(b)/EWP(l)

ACCESSION NR: AP5023212 JD/WW/DJ/RM UR/0374/65/000/004/0117/0122 66

620.179.4

63

AUTHOR: Deryagin, B. V. (Moscow); Toporov, Yu. P. (Moscow) 44,55 44,55 11

TITLE: Investigation of speed dependence of rolling friction as a method of adhesion testing

SOURCE: Mekhanika polimerov, no. 4, 1965, 117-122

TOPIC TAGS: friction, solid mechanics, friction coefficient, adhesion, intermolecular force, polymer, polyisobutylene, methacrylate plastic

ABSTRACT: A device is described for investigating the rolling friction of solids. It may be used to study adhesion processes. The device, which is based on reciprocal rolling of two cylinders, is shown in fig. 1 of the Enclosure. The resistance to rolling of solids covered with noncompatible polymer increases monotonically with rolling speed. The dependence of friction coefficient η upon the logarithm of rolling rate log V, is shown in fig. 2 of the Enclosure. The resistance to rolling of solids covered with compatible polymers reaches a maximum with increasing speed and subsequently decreases in accordance with the diffusion mechanism of sticking. The dependence of friction coefficient η upon logarithm of rol-

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L 3791-66

ACCESSION NR: AP5023212

ling rate log V for both surfaces lined with SKS-30-1 rubber is shown in fig. 3 of the Enclosure. "The authors express sincere thanks to Professor S. S. Voyutskiy for valuable advice and supplying the samples." Orig. art. has: 6 figures.

ASSOCIATION: none

SUBMITTED: 18Mar65 ENCL: 03 SUB CODE: GC, MT

NO REF SOV: 005 OTHER: 000

Card 2/5

L 3791-66

ACCESSION NR: AP5023212

ENCLOSURE: 01

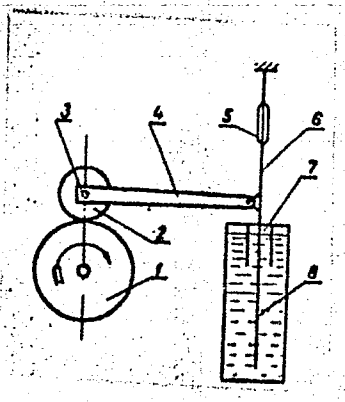

Fig. 1. 1--cylinder; 2--roller; 3--roller's fixing bolt; 4--holder; 5--strain gage; 6--dynamometer; 7--container filled with water; 8--damping blade.

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L 3791-66

ACCESSION NR: AP5023212

ENCLOSURE: 02

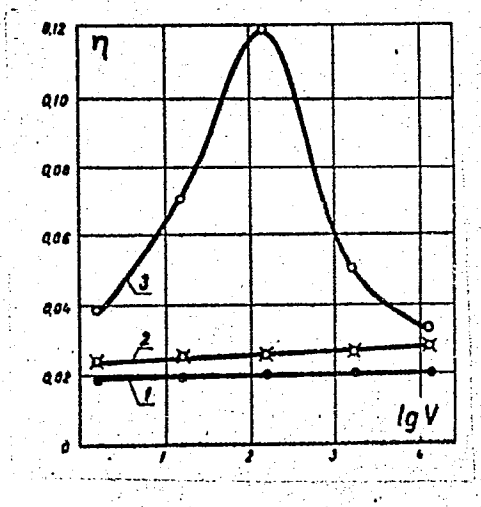

Fig. 2. 1--brass-steel friction system at normal load N = 60g; 2--organic glass-steel friction system at N = 12g; and 3--both friction surfaces lined with polyisobutylene at N=60g.

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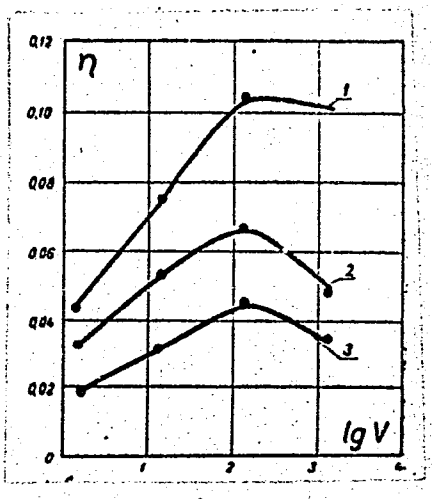
L 3791-66

ACCESSION NR: AP5023212

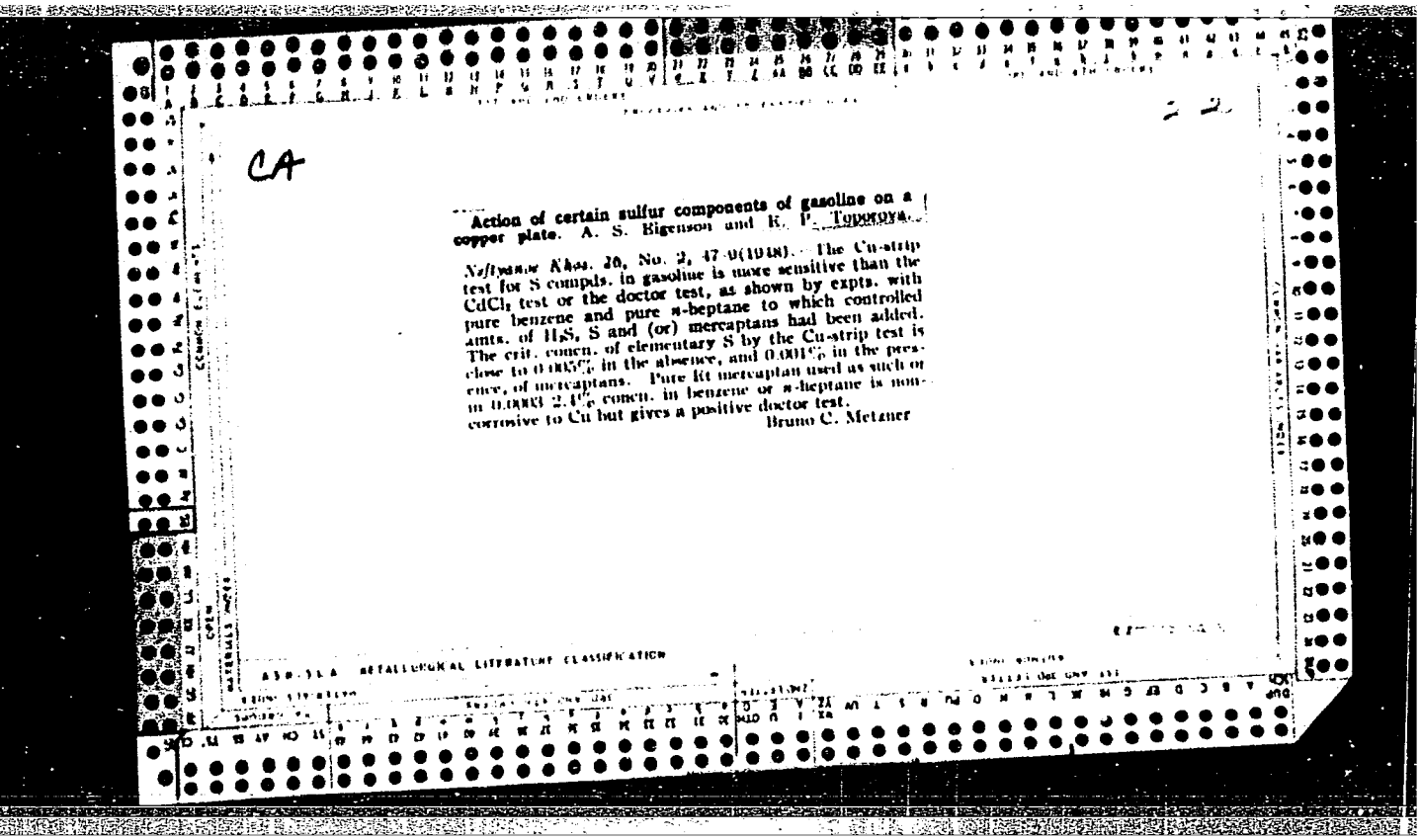
ENCLOSURE: 03



log V

Fig. 3. 1--lining made of SKS-30 + 10% methacrylic acid; 2--lining made of SKS-30 + 1.28% methacrylic acid; 3--lining made of SKS-30 + 0.5% methacrylic acid.

Card 5/5



CA

Action of certain sulfur components of gasoline on a copper plate. A. S. Bigenson and K. P. Topogova. *Neftyanoe Khoz.* 26, No. 2, 47-9(1948). The Cu-strip test for S compds. in gasoline is more sensitive than the $CdCl_2$ test or the doctor test, as shown by expts. with pure benzene and pure *n*-heptane to which controlled amts. of H_2S, S and (or) mercaptans had been added. The crit. concn. of elementary S by the Cu-strip test is close to 0.0005% in the absence, and 0.001% in the presence, of mercaptans. Pure *iso*-butyl mercaptan used as such or in 0.0001-2.0% concn. in benzene or *n*-heptane is noncorrosive to Cu but gives a positive doctor test.

Bruno C. Metzner

TOPOROVA, G.P. (Moskva)

Glycogen content in the liver of irradiated rats during the parenteral administration of glucose [with summary in English]. Vop.pit. 17 no.5:54-59 S-O '58 (MIRA 11:10)

(GLYCOGEN, metab.
liver content after parenteral admin of glucose in x-irradiated rats (Rus))
(LIVER, metab.
glycogen content after parenteral admin. of glucose in x-irradiated rats (Rus))
(ROENTGEN RAYS, eff.
on liver glycogen content after parenteral admin. of glucose in rats (Rus))
(GLUCOSE, metab.
liver glycogen content after parenteral glucose admin. in x-irradiated rats (Rus))

KALABINA, A.V.; TYUKAVKINA, N.A.; TOPOROVA, L.M.

Polymerization of simple vinyl esters of tar phenols produced at the semicoking of Cheremkhovo coal. IzvSib.otd.AN SSSR no.12:42-47 '61. (MIRA 15:3)

1. Irkutskiy gosudarstvennyy universitet.
(Vinyl compound polymers)

PEL'TIKHIN, S. V.: TOPOROVA, N.P.

Leather industry and Trade

New soft leather substitutes for special clothing., Leg. prom., no. 1, 1952

Monthly List of Russian Accessions, Library of Congress, March 1952. UNCLASSIFIED

SOV/137-58-12-24040

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 17 (USSR)

AUTHORS: Krestovnikov, A. N., Torgova, T. G.

TITLE: Determining the Free Energy of Zinc Ferrite Formation (K voprosu opredeleniya svobodnoy energii obrazovaniya ferrita tsinka)

PERIODICAL: Sb. nauchn. tr. Mosk. in-t tsvetn. met. i zolota, nauchno-tekhn. o-vo tsvetn. metallurgii, 1957, Nr 30, pp 362-367

ABSTRACT: The reduction of Zn ferrite by carbon monoxide and dissociation of the ferrite are experimentally studied with the object of calculating the free energy of the reaction of zinc ferrite formation from ZnO, Fe_2O_3, and O_2. A monometric method of determining the ferrite dissociation pressure made possible a more precise calculation of the isobaric reaction potential. The dissociation pressures and free energies of dissociation of Zn ferrite in the 1200-1300°C range are presented. The free energies of Zn ferrite formation from the elements are confirmed by calculations on the data of other authors. The results obtained yield the free energy of ferrite formation in the 1000-1300° interval, which is 1-3 kcal/mole, indicating that Zn ferrite is unstable under these conditions. L. P.

Card 1/1

TOPOROVA, T.P.

Determining the water vapor content of the atmosphere.
Izv. Astrofiz.Inst. AN Kazakh.SSR 1 no.1/2:219-226 '55.
(MLRA 9:10)

(Humidity)

TOPOROVA, V.A.

Solution of a problem on the rotation of a heavy solid body around a stationary point under Goriachev and Chaplygin's condition in hyperelliptical functions. Dokl.AN Uz.SSR no.12: 9-13 '58. (MIRA 12:1)

1. Institut matematiki i mekhaniki im. V.I.Romanovskogo AN UzSSR. Predstavleno akademikom AN UzSSR T.N.Kary-Niyazovym.
(Gyroscope)

TOPOROVA, V.A.

Integrating the rotation equations of a heavy solid body around an immobile point as in the general Goriachev-Chaplygin case. Izv. AN Uz.SSR. Ser. fiz.-mat. nauk no.2:77-85 '58. (MIRA 11:10)

1. Institut matematiki i mekhaniki imeni V.I. Romanovskogo AN UzSSR.
(Motion) (Differential equations)

34197
S/139/61/000/006/018/023
E194/E484

15.8050

AUTHORS: Nesterov, V.M., Toporova, V.N.

TITLE: The influence of gamma irradiation on the dielectric properties of vinyplast

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Fizika. no.6, 1961, 141-144

TEXT: Vinyplast is based on orientated films of polyvinyl chloride which is a substance that undergoes marked changes in properties after gamma irradiation. Irradiation causes the evolution of gaseous HCl and there are changes in the mechanical, optical and electrical properties. As relatively little work has been done on the changes in electrical properties, the present authors studied the influence of a radiation dose of up to 10^7 rad at a rate of 50000 rad/hour on the permittivity ε, tan δ and resistivity σ of vinyplast in the frequency range of 20 to 10^{10} c/s and the temperature range 20 to 120°C. After irradiation the tan δ of vinyplast at frequencies of 3×10^9 and 10^{10} c/s diminishes, particularly at the higher temperatures. However, at frequencies of 10^6 to 10^7 c/s there is no difference

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The influence of gamma ...

between the loss angles of vinyplast before and after irradiation. In the audio-frequency range irradiation displaces the maximum tan δ towards higher temperatures. The permittivity, which is not altered by irradiation at frequencies of 10^6 to 10^{10} c/s, is reduced at audio frequencies, particularly at the higher temperatures. Resistivity/temperature curves plotted as log σ against 1/T display an inflection point which is displaced towards higher temperatures when the sample is irradiated; however, the slope of the curve is unchanged so there is no change in the energy of activation of current carriers. However, after irradiation, the conductivity is greater at temperatures above the inflection point. X-ray analysis revealed no changes in the structure of vinyplast after irradiation though compression curves obtained by other authors with similar doses were claimed to reveal changes in structure. An attempt is made to assess the possible structural changes in relation to the energy absorption and it is considered that there is no change in electrical properties of the actual vinyl groups but that changes in the macro-molecule are more likely. Properties associated with fillers or other admixtures

Card 2/3

The influence of gamma ...

may also change because the hydrogen and the chlorine ions formed during irradiation may neutralize ions of admixtures. It is claimed that these conclusions are confirmed by the experimental results. There are 6 figures and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The two references to English language publications read as follows: Ref.1: D.E.Harmer. Nucleonics, v.10, 1959, 72; Ref.3: Klein Mannal. Communic. and Electronics, no.2, 1956.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V.Kuybysheva
(The Siberian Physicotechnical Institute of Tomsk University imeni V.V.Kuybyshev)

SUBMITTED: September 30, 1960

Card 3/3

X

69466

S/069/60/022/02/014/024
D034/D002

15.9130

AUTHORS: Fialkov, A.S., Temkin, I.V., Toporova, V.P.

TITLE: The Effect of Vibro-Disintegration on the Reinforcing Properties of Carbon Blacks

PERIODICAL: Kolloidnyy zhurnal, 1960, Vol XXII, Nr 2, pp 229-232 (USSR)

ABSTRACT: The authors report on a comparative study of the changes in the reinforcing abilities of carbon blacks in dependence on the disintegration of the secondary structure (chains formed by mutually combined black particles). Lamp and gas channel black were crushed in a vibromill and subsequently introduced into a rubber mixture. The blacks were processed in a vibromill of type M-10 (volume of the body - 10 l) with a vibration amplitude of 2.5 mm and a vibration frequency of 25 cycles per second

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S/069/60/022/02/014/024
D034/D002

The Effect of Vibro-Disintegration on the Reinforcing Properties of Carbon Blacks

under isothermal conditions (25-30°C). Volumetrically the crushed specimens were measured in a dry state and in "Galosha" benzene. The oil values and the conditional specific surface were determined with a photoelectrocolorimeter of the type FEK-M. The table shows that after the crushing process the volume of the blacks diminishes, in the dry state as well as in benzene. The same holds for the oil values. These changes are apparently the result of a thorough--going disintegration of the secondary structure, which is confirmed by the electron microphotographs given on the insert. The disintegration of the secondary structure sets free a considerable number of active centers, which interact with air oxygen. This results in an activation of the blacks (graph in

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S/069/60/022/02/014/024
D034/D002

The Effect of Vibro-Disintegration on the Reinforcing Properties of Carbon Blacks

Figure 3). The introduction of disintegrated blacks into rubber mixes caused modulus reduction and an increase in the relative elongation of the mixes (graph in Figure 3). An abrupt fall in the breaking strength of rubber mixes was observed in the case of introduction of disintegrated channel black (see table). The authors assume more intense structure disintegration and oxidation as the basis of the observed phenomenon. X-ray analysis of lamp black disintegrated for 16 hours did not reveal changes in the structure of the crystalline particles. Blacks processed in vibromills may be used for special rubber mixes, and also as activators in the granulation of ordinary blacks. There are 2 graphs, 1 set of electron microphotographs on centerfold, 1 table and 6 references, 5 of which are Soviet and 1 German.

SUBMITTED: February 27, 1959

Card 3/3

TOPOROVA, V.V.

PHASE I BOOK EXPLOITATION SOV/4601

Koordinatsoye soveshchaniye po primeneniyu kisloroda na metallurgicheskikh zavodakh Urala. Sverdlovsk, 1956

Primeneniye kisloroda na metallurgicheskikh predpriyatiyakh Urala; materialy koordinatsionnogo soveshchaniya (Use of Oxygen in Metallurgical Plants of the Urals; Materials of the Coordination Conference) Sverdlovsk, 1960. 152 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Ural'skiy filial. Institut metallurgii; Ural'skiye pravleniya nauchno-tekhnicheskikh obshchestv chernoy i tsvetnoy metallurgii.

Resp. Ed.: P.S. Kusakin, Candidate of Technical Sciences; Tech. Ed.: N.F. Seredkina.

PURPOSE: This collection of papers is intended for scientific research and technical personnel in the field of metallurgy.

COVERAGE: The use of oxygen in ferrous and nonferrous metallurgy of the Urals is discussed. Results of experimental use of oxygen in some metallurgical plants are presented. During the Conference, held December 20 and 21, 1956, the following persons (in addition to the authors) took part in the discussion: V.Ya. Miller, V.V. Mikhaylov, P.Ya. Sorokin, A.A. Perestoronin (all affiliated with the Institute of Metallurgy of the Ural Branch AS USSR), S.M. Kazachenko (Nizhne-Saldinskiy metallurgicheskiy zavod - Nizhnyaya-Salda Metallurgical Plant), M.F. Kochin (Deceased) (Ural'skiy institut chernykh metallov - Ural Institute of Ferrous Metals), N.Ye. Kislitsin (Chelyabinskiy metallurgicheskiy zavod - Chelyabinsk Metallurgical Plant), G.V. Demin (Krasnoural'skiy medeplavil'nyy zavod - Krasnoural'sk Copper Smelting Plant), V.A. Aglitskiy (Institut Unipromed' - "Unipromed'" Institute). Some of the papers are followed by references, both Soviet and non-Soviet.

DIYEV, N.P.; OKUNEV, A.I.; PADUCHEV, V.V.; TOPOROVA, V.V.; MOKRONOSOV, V.S.

Sulfur monoxide as an intermediate product of oxidation of some sulfides. Dokl.AN SSSR 107 no.2:273-275 Mr '56. (MLRA 9:7)

1.Institut metallurgii Ural'skogo filiala Akademii nauk SSSR. Predstavlena akademikom A.N.Frumkinym.
(Sulfur oxides) (Sulfides)

USSR/ Inorganic Chemistry. Complex Compounds

C.

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11434

Author : Diyev N.P., Okunev A.I., Paduchev V.V., Toporova V.V., Mokronosov V.S.
Inst : Academy of Sciences USSR
Title : Sulfur Monoxide as an Intermediate Product of Oxidation of Some Sulfides

Orig Pub : Dokl. AN SSSR, 1956, 107, No 2, 273-275

Abstract : To provide a qualitative characteristic of roasting gases and ascertain the presence therein of the intermediately formed SO an investigation was made of the absorption spectrum of gas containing the products of oxidation of CuS, FeS and ZnS, at 700-1000°, with oxygen (use was made of a mixture $O_2 + N_2$ containing up to 3% O_2), and experiments were also carried out on recovery from the oxidation products of a red-orange precipitate on the walls of traps cooled with liquid nitrogen. (Schenk P.W., Platz H., Z. anorgan. und allgem. Chem., 1933, 211, 150). With a rate of flow of roasting gases equal to 3-4 ml/sec., SO bands having absorption maxima 3041, 3077, 3115, 3153, 3194 and 3234 A, were detected. With a gas velocity of $<$ 2 ml/sec the SO absorption bands are absent which the author attribute to a rapid decomposition of SO at hight temperature. Determination of SO according to the method of Schenk also yielded positive results.

1/1

SOV/137-58-12-24053

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 20 (USSR)

AUTHORS: Diyev, N. P., Okunev, A. I., Paduchev, V. V., Toporova, V. V., Mokronosov, V. S.

TITLE: Sulfur Monoxide as an Intermediate Product in the Oxidation of Certain Sulfides (Monookis sery kak promezhutochnyy produkt okisleniya nekotorykh sul'fidov)

PERIODICAL: Tr. In-ta metallurgii, Ural'skiy fil. AN SSSR, 1957, Nr 1, pp 17-21

ABSTRACT: The presence of SO as an intermediate product in sulfide oxidation is discovered by photometry of the absorption spectrum of a gas containing the oxidation products of Fe, Cu, and Zn sulfides, and also by the Schenck method, with a 3-4 ml/sec flow of roasting gases SO is a reactant stimulating the oxidation of sulfide and facilitating formation of nascent oxygen. Thermodynamic analysis of the processes of ZnS oxidation, with formation and decomposition of SO, also indicates the probability of the following reactions: $MeS_{ads} 2O \rightarrow MeO + SO$; $2SO = SO_2 + S$; $S + O_2 = SO + O$.

Card 1/1 G. F.

TOPOROVA, V.V.

137-58-5-9297

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 73 (USSR)

AUTHORS: Diyev, N.P., Paduchev, V.V., ~~Toporova, V.V.~~

TITLE: Employment of Steam in the Process of Bessemerizing Copper Mattes With Oxygen (Primeneniye vodyanogo para pri bessemerovanii mednykh shteynov na kislorode)

PERIODICAL: Izv. vost. fil. AN SSSR, 1957, Nr 6, pp 79-84

ABSTRACT: In order to control the heat balance in the Bessemer process employing O_2, it is suggested that the process be conducted with steam-oxygen blowing. Equilibrium compositions of gases were determined, by means of thermodynamic analysis and from experimental data, for the following reactions:

$$3FeS + 3H_2O + 1.5SiO_2 = 1.5Fe_2SiO_4 + 3H_2S;$$
$$FeS + 3H_2O + 0.5SiO_2 = 0.5Fe_2SiO_4 + SO_2 + 3H_2.$$

The composition of the steam-oxygen mixture is calculated. It is established that up to 25-33% of the S contained in the charge may be obtained in its elemental form if the concentration of O_2 amounts to 40-45% and the temperatures are maintained within limits approximating those employed in the process with air blowing. 1. Steam--Applications 2. Mixtures--Thermodynamic properties 3. Copper--Production 2. Blast furnaces --Operation

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TOPOROVA, V.V

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Akademiya nauk SSSR. Ural'skiy filial, Sverdlovsk. Institut metallurgii

Sbornik rabot laboratorii metallurgii tyazhelykh tsvetnykh metallov (Collection of Studies in the Metallurgy of Heavy Nonferrous Metals), Sverdlovsk, 1957. 168 p. (Series: Its Trudy, vyp. 1) 2,850 copies printed.

Resp. Eds.: Babadzhan, A.A., Candidate of Technical Sciences; and Kusakin, P. S., Candidate of Technical Sciences; Ed.: Demin, I.M.; Tech. Ed.: Izmodenova, L.A.

PURPOSE: This book is intended for scientific and industrial personnel interested in recent advances in the theory and practice of metallurgical processes.

COVERAGE: The articles in this book are grouped into five sections. Part I presents results of experimental studies in the theory and practice of the oxidation of sulfides, metals, and alloys. Part II contains data on the thermodynamics of metallurgical processes. The articles in Part III are devoted to individual problems in copper and nickel metallurgy. Part IV is concerned with certain aspects of the electrometallurgy of aluminum and

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magnesium. Experimental data on methods of determining selenium and tellurium are given in Part V.

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DIYEV, N.P.; OKUNEV, A.I.; PADUCHEV, V.V.; TOPOROVA, V.V.; MOKRONOSOV, V.S.

Sulfur monoxide as intermediate product of oxidation of certain sulfides. Trudy Inst. met. UFAN SSSR no.1:17-21 '57. (MIRA 11:9)
(Sulfides--Metallurgy) (Sulfur oxides)

AUTHORS: Diyev, N. P., (Deceased), Paduchev, V. V., Toporova, V. V., Uspenskiy, N. F. 20-118-4-43/61

TITLE: On the Interaction of Certain Sulfides With Sulphur Dioxide and Sulfates (Vzaimodeystviye nekotorykh sul'fidov s sernistym angidridom i sul'fatami)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 4, pp. 782-784 (USSR)

ABSTRACT: The results of the investigations concerning the reaction in question with application of S^{35} are given in the present paper. The experiments have shown that the sulfur in the calcium sulfide is completely substituted by the sulfur of the sulfur anhydride. The radioactive sulfur was introduced selectively into one of the two components. The reaction was carried out at 600-1100°. In the investigation of the interaction between cobaltous sulfide and SO_2 S^{35} was introduced only into the sulfide. The experiments have shown that the velocity of the interaction is unimportant even at 800°. Therefore it was difficult to detect precisely the radioactivity originating from sulfur in the gaseous reaction products because of a considerable SO_2-dilution, if the experiment was

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carried out in a continuous SO_2 - current. In a closed system the produced cobaltous sulfate was radioactive only to a very small extent, approximatively 2-5% of the activity of the initial sulfide. This might be explained by the compensation of the radioactivity between S_2 and SO_2 in consequence of an isotopic exchange. The experiments have shown that two different reactions (with 2 and 8 SO_2) with Co_4S_3 can occur. At 800° only 5,5% of the initial sulfide react within 12-14 hours, in the first case 87%, and in the second case 13% of this quantity. Experiments with iron sulfide have confirmed these processes. Thus it was confirmed that in the system MeS + SO_2 the sulfur of SO_2 replaces in the sulfate formation completely or almost completely the sulfide sulfur. Probably an instable salt of the hydrosulfurous acid MeS_2O_4 (references 6,7) is formed for the time being which is transformed into a sulfate at the cost of intramolecular processes under precipitation of surplus sulfur in elementary shape. It is possible that the original product of the sulfide oxidation forms oxides of the latter the sulfatization of which can be continued at the cost of SO_2 and SO_3. The interaction between sulfides and sulfates of the same metals was in-

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vestigated in application to calcium- and cobaltous sulfate at 900°. The experimental results have shown that this reaction takes the same course in any case of placing the radioactive sulfur, and only the activity of the sulfur in the reaction products is different (misprint in the original: the small star above the S of the equation (11) is missing; the reviewer). 3 reactions (12), (13), and (14) are given for the interaction between cobaltous sulfide and cobaltous sulfate according to references 8-12. The application of S^{35} and a rational analysis of the reaction products confirmed the formation of a secondary radioactive sulfide and of the metallic cobalt. Here it turned out that the course of the reaction (13) is by 3-4 times less intensive than (12). Therefore the mechanism of the sulfide oxidation (13) (perhaps misprint for: 13? the reviewer) earlier suggested by the authors must be supplemented by widely distributed secondary acts which pass simultaneously:

$$Me\overset{*}{S} + 2\ SO_2 \longrightarrow MeS_2O_4 + \overset{*}{S} \quad (15)$$

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$$MeS_2O_4 \longrightarrow MeSO_4 + S \quad (16)$$

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$$MeS^{*} + 3\ MeSO_4 \longrightarrow 4\ MeO + 3\ SO_2 + S^{*}O_2 \quad (17)$$

$$MeS^{*} + MeSO_4 \longrightarrow 2\ Me + SO_2 + S^{*}O_2 \quad (18)$$

There are 13 references, 8 of which are Soviet.

ASSOCIATION: Ural Branch, AS USSR (Ural'skiy filial Akademii nauk SSSR)

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DIYEV, N.P. [deceased]; PADUCHEV, V.V.; TOPOROVA, V.V.; USPENSKIY, N.F.

Studying the interaction of sulfides with sulfurous anhydride and sulfates. Trudy Inst. met. UFAN SSSR no.2:107-115 '58. (MIRA 12:4)

(Sulfides--Metallurgy) (Sulfur dioxide)